



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/846,205	05/02/2001	Hoon Lee	11349-P66632US0	7246
43569	7590	09/14/2006	EXAMINER	
MAYER, BROWN, ROWE & MAW LLP 1909 K STREET, N.W. WASHINGTON, DC 20006			PERILLA, JASON M	
			ART UNIT	PAPER NUMBER
			2611	

DATE MAILED: 09/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/846,205

Applicant(s)

LEE ET AL.

Examiner

Jason M. Perilla

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 4-6 and 8-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4-6, and 8-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. Claims 1, 2, 4-6, and 8-16 are pending in the instant application.

#### ***Response to Arguments***

2. Applicant's arguments filed July 19, 2006 have been fully considered but they are not persuasive.

Applicant's argument rests on the claim that "a symbol rate is not analogous to a transmission rate." However, the Examiner insists that the overall transmission rate of any given system is directly determined (in part) according to the symbol rate. That is, in a digital system, each symbol conveys a specified number of bits (i.e. bits/symbol – an *a priori* quantity) and the rate of transmission of the symbols determines the overall transmission rate. Once the number of bits/symbol and the number of symbols/unit time is determined, the metric of bits/unit time or "transmission rate" is known.

#### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 2, 4-6, and 8-16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Wei (U.S. Pat. No. 5243629 – newly cited) in view of the Applicant's Admitted Prior Art ("AAPA"; Specification May 2, 2001, pgs. 1-3, fig. 1).

Regarding claim 1, Wei discloses QAM transmission band splitting means (fig. 1, ref. 105) for distributing (fig. 1, refs. 11, 13, . . . 18, and 22) transmission (TX) data (fig.

Art Unit: 2611

1, ref. 5) to a predetermined number of band transmit processing means (fig. 1, refs. 121, 123, . . . 128 and 132; 141, 143, . . . 148, and 152); wherein the band splitting means distributes the TX data to each of a predetermined number of band TX processing means based on predetermined (figs. 5-8, i.e. 4, 8, 12, or 16 bits) and different (i.e. 4, 8, 12, or 16 bit) data transmission rates (col. 3, lines 20-27; col. 4, lines 1-30; col. 4, lines 11-13), converting or modulating each of the band transmit processing means outputs to a passband signal (fig. 1, refs. 161, 163, . . . 168, and 172), and synthesizing means (fig. 1, ref. 175) for synthesizing the converted passband signals.

Wei discloses that each of the TX processing means comprises: channel encoders, constellation mappers, and baseband modulators (fig. 1), but does not explicitly disclose that the predetermined number of band TX processing means is for: symbol-encoding the output data of the band splitting means, pulse-shaping, and interpolating the symbol-encoded data. Further, Wei does not disclose TC (Transmission Convergence) sub-layer means for performing frame processing and error correction for the transmission data or digital-to-analog converting and outputting means for converting the synthesized digital TX data to an analog synthesized TX signal to output.

However, the AAPA according to figure 1 teaches an exemplary band transmit processing means for symbol-encoding (fig. 1, ref. 102) the output data of the band splitting means, pulse-shaping (fig. 1, ref. 104), and interpolating (106) the symbol-encoded data. The AAPA further teaches TC (Transmission Convergence) sub-layer means (fig. 1, ref. 100) for performing frame processing and error correction for the

Art Unit: 2611

transmission data and digital-to-analog converting and outputting means (fig. 1, ref. 112) for converting the synthesized digital TX data to an analog synthesized TX signal to output. The AAPA teaches that the symbol encoding, pulse shaping, and interpolating allows for a variable symbol rate (pg. 2, lines 7-10) and that the TC sub-layer provides the advantage of frame processing and error correction (pg. 1, lines 20-23). One skilled in the art would find it an advantage to utilize the TC sub-layer means and components of the band transmit processing means as taught by the AAPA because they provide an exemplary means to transmit data at various data rates. Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to utilize the various components of the band processing means and the TC sub-layer means as taught by the AAPA in the apparatus of Wei because they provide exemplary means for QAM symbol transmission with various data rate flexibility. Furthermore, one skilled in the art would find it obvious that the transmitter of Wei in view of the AAPA would require that the band processing means output is digital-to-analog converted for transmission because an analog signal is required for over the air transmission. Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to apply a digital-to-analog converter after the synthesizer as taught by the AAPA in the apparatus of Wei because a digital signal must be converted to analog before it is transmitted over the air.

Regarding claim 2, Wei in view of the AAPA disclose the limitations of claim 1 as applied above. Further, in the apparatus of Wei in view of the AAPA, it is inherent that

Art Unit: 2611

the data transmission rate of the TC sub-layer means is equal to sum of data transmission rates of the band TX processing means. The TC sub-layer means may be applied before the band splitting means. Therefore, the TC sub-layer supplies all of the data to the band splitting means and, hence, to all of the band TX processing means.

Regarding claim 4, Wei in view of the AAPA disclose the limitations of claim 1 as applied above. Further, Wei in view of the AAPA disclose that the band splitting means distributes the TX data to each of the predetermined number of band processing means in four bit units (figs. 5-8). That is, the QAM symbols are one of 4 bit per symbol, 8, 12, or 16 bits per symbol. Wei does not disclose that the distribution of bits is grouped into bytes. However, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to split the data into units of bytes. Applicant has not disclosed that the division of data into bytes provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected the apparatus of Wei in view of the AAPA to perform equally well with dividing data into four bit segments or eight bit byte segments because the unit of data division would be chosen only according to the desired data rate of the apparatus. Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to divide the data into four bit segments or eight bit bytes depending upon the design choice to accommodate the desired data rate of the system.

Regarding claim 5, Wei in view of the AAPA disclose the limitations of claim 1 as applied above. Further, Wei in view of the AAPA disclose that the band splitting means

encodes the TX data in four bit units (figs. 5-8). However, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to encode the data into four bit segments or eight bit bytes depending upon the design choice to accommodate the desired data rate of the system as applied to claim 4 above.

Regarding claims 6, 8, and 9, the claims are disclosed by Wei in view of the AAPA as applied to claims 1, 4, and 5, respectively, above.

Regarding claims 10, 11, 12, and 13, the claims are disclosed by Wei in view of the AAPA as applied to claims 1, 2, 4, and 5, respectively, above.

Regarding claims 14, 15, and 16, the claims are disclosed by Wei in view of the AAPA as applied to claims 1, 4, and 5, respectively, above.

### ***Conclusion***

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR § 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 2611

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M. Perilla whose telephone number is (571) 272-3055. The examiner can normally be reached on M-F 8-5 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Jason M. Perilla  
September 5, 2006

jmp

  
CHIEH M. FAN  
SUPERVISORY PATENT EXAMINER